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EXAMINER

PRENDERGAST, ROBERTA D

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UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES

Ex parte DEE GARDINER,
ROBERT GRANGE, and RICHARD MOON

Appeal 2008-4836
Application 09/694,411
Technology Center 2600

Decided:¹ February 12, 2009

Before JOSEPH F. RUGGIERO, MAHSHID D. SAADAT,
and KEVIN F. TURNER, *Administrative Patent Judges*.

RUGGIERO, *Administrative Patent Judge*.

DECISION ON APPEAL

¹ The two-month time period for filing an appeal or commencing a civil action, as recited in 37 C.F.R. § 1.304, begins to run from the decided date shown on this page of the decision. The time period does not run from the Mail Date (paper delivery) or Notification Date (electronic paper).

STATEMENT OF THE CASE

Appellants appeal under 35 U.S.C. § 134 from the Final Rejection of claims 10-14, 24, 26-29, 32, 34, and 35. Claims 1-9, 15-23, 25, 30, 31, 33, and 36-38 have been canceled. We have jurisdiction under 35 U.S.C. § 6(b).

We reverse.

Rather than reiterate the arguments of Appellants and the Examiner, reference is made to the Briefs and Answer for the respective details. Only those arguments actually made by Appellants have been considered in this decision. Arguments which Appellants could have made but chose not to make in the Briefs have not been considered and are deemed to be waived [see 37 C.F.R. § 41.37(c)(1)(vii)].

APPELLANTS' INVENTION

Appellants' claimed invention relates to a system and method for reducing transport delay in a computer image generator using a single pixel frame buffer. The single pixel frame buffer is divided into a plurality of screen bins and primitives are stored in each screen bin which is touched by the primitives. The screen bins are rendered by row from top to bottom with at least one rendered screen bin being displayed before rendering for all of the screen bins has been completed. (Spec. 7:16-8:2).

Claim 10 is illustrative of the invention and reads as follows:

10. A method for enabling a single pixel frame buffer for simultaneous rendering and display in a computer image generator, comprising the steps of:

(a) dividing a geometry buffer into a plurality of screen bins;

- (b) storing primitives in each screen bin the primitives touch;
- (c) rendering the screen bins by row from top to bottom, into the single pixel frame buffer;
- (d) displaying at least one row of screen bins rendered before the rendering of all the screen bins has completed, wherein the displaying of the screen bins takes place after a selected portion of the screen bins for a current field have been rendered.

THE EXAMINER'S REJECTIONS

The Examiner relies on the following prior art references to show unpatentability:

Kajiya	US 5,864,342	Jan. 26, 1999
Taraci	US 6,316,974 B1	Nov. 13, 2001 (filed Aug. 26, 2000)
Grigor	US 6,853,381 B1	Feb. 8, 2005 (filed Sep. 16, 1999)

Claims 10, 11, and 13 stand rejected under 35 U.S.C. § 102(b) as being anticipated by Kajiya.

Claims 12 and 14 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Kajiya in view of Grigor.

Claims 24, 26-29, 32, 34, and 35 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Kajiya in view of Taraci.

ISSUES

- (i) *Under 35 U.S.C. § 102(b), does Kajiya have a disclosure which anticipates the invention set forth in claims 10, 11, and 13?*

The pivotal issue before us in making this determination is whether Appellants have demonstrated that the Examiner erred in determining that Kajiya discloses the displaying of at least one row of image screen bins that have been rendered before the rendering of all of the screen bins has been completed.

- (ii) *Under 35 U.S.C. § 103(a), with respect to appealed claims 12, 14, 24, 26-29, 32, 34, and 35, would one of ordinary skill in the art at the time of the invention have found it obvious to separately combine Kajiya with Grigor and Taraci to render the claimed invention unpatentable?*

The pivotal issue before us is in making this determination is whether Appellants have demonstrated that the Examiner erred in determining that the combination of Kajiya and/or Grigor and Taraci provides a teaching or suggestion of displaying a row of rendered screen bin pixel images before the rendering of all the screen bins has been completed.

FINDINGS OF FACT (FF)

The record supports the following findings of fact (FF) by a preponderance of the evidence:

1. Kajiya discloses the rendering of graphical objects to generate a displayed image in which the geometry of a scene is divided into chunks. The geometry for a chunk is rendered into a single rasterization buffer

before the geometry for the next chunk is rasterized into the same rasterization buffer. (Kajiya, col. 1, ll. 56-58 and col. 6, ll. 16-28).

2. Kajiya further discloses (col. 16, ll. 15-24) a rendering operation which takes place in tiler 200 and which uses a double buffer but which, alternatively, could be implemented using a single common buffer.

3. The rendering operation of Kajiya is further described at column 14, lines 16-37 which explains that transformed rendered data resulting from the operations of tiler 200 and gsprite engine 204 is sent to a compositing buffer 210 for display processing.

4. Kajiya indicates (col. 59, ll. 62-67) that the image processor performs compositing and display generation *after* gsprites in a frame have been rendered and transformed.

5. Grigor discloses (col. 8, ll. 22-60) a display device write behind controller in which write access to a frame buffer by a rendering engine is prohibited if access is to an area below a currently available location.

6. Taraci discloses (col. 8, ll. 35-45) a system which vertically locks input and output video frame rates by locking input and output vertical sync pulses and adjusting a reference frequency to the pixel clock.

PRINCIPLES OF LAW

1. ANTICIPATION

It is axiomatic that anticipation of a claim under § 102 can be found if the prior art reference discloses every element of the claim. *See In re King*, 801 F.2d 1324, 1326 (Fed. Cir. 1986) and *Lindemann Maschinenfabrik GMBH v. American Hoist & Derrick Co.*, 730 F.2d 1452, 1458 (Fed. Cir. 1984).

In rejecting claims under 35 U.S.C. § 102, “[a] single prior art reference that discloses, either expressly or inherently, each limitation of a claim invalidates that claim by anticipation.” *Perricone v. Medicis Pharmaceutical Corp.*, 432 F.3d 1368, 1375-76 (Fed. Cir. 2005), citing *Minn. Mining & Mfg. Co. v. Johnson & Johnson Orthopaedics, Inc.*, 976 F.2d 1559, 1565 (Fed. Cir. 1992). “Anticipation of a patent claim requires a finding that the claim at issue ‘reads on’ a prior art reference.” *Atlas Powder Co. v. IRECO, Inc.*, 190 F.3d 1342, 1346 (Fed Cir. 1999) (“In other words, if granting patent protection on the disputed claim would allow the patentee to exclude the public from practicing the prior art, then that claim is anticipated, regardless of whether it also covers subject matter not in the prior art.”) (internal citations omitted).

2. OBVIOUSNESS

In rejecting claims under 35 U.S.C. § 103, it is incumbent upon the Examiner to establish a factual basis to support the legal conclusion of obviousness. *See In re Fine*, 837 F.2d 1071, 1073 (Fed. Cir. 1988). In so doing, the Examiner must make the factual determinations set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 17 (1966). “[T]he examiner bears the initial burden, on review of the prior art or on any other ground, of presenting a *prima facie* case of unpatentability.” *In re Oetiker*, 977 F.2d 1443, 1445 (Fed. Cir. 1992). Furthermore,

“‘there must be some articulated reasoning with some rational underpinning to support the legal conclusion of obviousness’ . . . [H]owever, the analysis need not seek out precise teachings directed to the specific subject matter of the challenged claim, for a court can take account of the inferences and creative steps that a person of ordinary skill in the art would employ.”

KSR Int'l Co. v. Teleflex Inc., 127 S. Ct. 1727, 1741 (2007)(quoting *In re Kahn*, 441 F.3d 977, 988 (Fed. Cir. 2006)).

ANALYSIS

35 U.S.C. § 102(b) REJECTION

Appellants' arguments in response to the Examiner's anticipation rejection of independent claim 10 based on Kajiya assert that the Examiner has not shown how each of the claimed features is present in the disclosure of Kajiya so as to establish a prima facie case of anticipation. Appellants' arguments (App. Br. 29-30; Reply Br. 8) focus on the contention that, in contrast to the requirements of appealed independent claim 10, Kajiya does not disclose "displaying at least one row of screen bins rendered before the rendering of all the screen bins has completed...."

We agree with Appellants. We would point out, however, that we do not agree with Appellants' initial contention (App. Br. 28; Reply Br. 7) that the Examiner erred in determining that Kajiya's rasterization buffer, which is involved in the rendering operation, is not a single buffer as claimed. We find no error in the Examiner's conclusion (Ans. 10) that Kajiya's description at column 6, lines 15-29 supports the view that alternative implementations of the rasterization buffer, one of which is a single buffer implementation, is disclosed. Similarly, we find that Kajiya's description (col. 16, ll. 15-24) of the operation of tiler 200, which performs rendering, describes alternative buffering implementations, one of which is the use of a common, i.e., a single, buffer.

We further find no error in the Examiner's determination (Ans. 5 and 10) that Kajiya provides a disclosure (Figures 25 and 27, col. 60, ll. 63

through col. 64, ll. 1-4) of a compositing buffer 210 which operates to display a band, i.e., a row, of pixel data while another band is being composited. While Appellants contend (App. Br. 29) that Kajiya's compositing buffer is a traditional double buffer as opposed to the claimed single buffer, it is noteworthy that, as pointed out by the Examiner (*id.*), there is no claimed requirement that the displaying operation takes place from a single buffer.

With the above discussion in mind, however, we do find ourselves in agreement with Appellants (App. Br. 29-30; Reply Br. 8) that Kajiya simply does not disclose the displaying of a row of pixels before the rendering of all pixels has been completed as specifically set forth in independent claim 10. It is apparent from the disclosure of Kajiya that, while Kajiya does describe the displaying of a band (row) of pixels while another band is being composited in compositing buffer 210 as previously discussed, this compositing operation is being performed on pixel data for which the rendering operation has already been completed.

Kajiya's disclosure of the rendering operation indicates that the rendering of pixel image data is taking place in tiler 200 and gsprite engine 204, after which the rendered image data is sent to a compositing buffer for display. As disclosed in Kajiya (Figure 4A, col. 14, ll. 16-30), tiler 200 renders pixel imaged data into gsprite chunks which are in turn transformed and filtered by gsprite engine 204 and the resulting transformed rendered data is then sent to the compositing buffer 210 where it is processed for display. That Kajiya's compositing buffer 210 is operating on pixel image data which has already been rendered is confirmed by Kajiya at column 59, lines 62-64 which states "[a]fter rendering and calculating affine transforms

for gsprites in a frame, the image processor *then* performs display generation.” (Emphasis added).

In view of the above discussion, since Appellants’ arguments have demonstrated that the Examiner erred in determining that all of the claim limitations are present in the disclosure of Kajiya, we do not sustain the Examiner’s 35 U.S.C. § 102(b) rejection of independent claims 10, nor of claims 11 and 13 dependent thereon.

35 U.S.C. § 103(a) REJECTIONS

Dependent claims 12 and 14

We also do not sustain the Examiner’s obviousness rejection of dependent claims 12 and 14 based on the combination of Kajiya and Grigor. The Examiner has applied the Grigor references to Kajiya to address the display/rendering envelope overlapping features of the rejected claims. We find nothing in the disclosure of Grigor, however, which overcome the innate deficiencies of the Kajiya reference discussed *supra*.

Claims 24, 26-29, 32, 34, and 35

The Examiner’s obviousness rejection of independent claims 24 and 32 and their respective dependent claims 26-29, 34, and 35, based on the combination of Kajiya and Taraci is also not sustained. Independent claims 24 and 32 also include the feature set forth in previously discussed independent claim 10 requiring the displaying of rendered screen bin data before the rendering of all screen bins has been completed, but with the further qualifying limitation that rendering must be at least ½ completed before displaying occurs.

In addressing the claimed limitations, the Examiner has applied the Taraci reference, which is directed (col. 8, ll. 15-25) to addressing frame rate delay problems in seamless graphic switchers, to Kajiya. As with the previously discussed Grigor reference, however, we find nothing in the disclosure of Taraci which overcomes the basic deficiency of Kajiya in disclosing the displaying of at least one row of rendered screen bins before all of the screen bins have been rendered as presently claimed.

CONCLUSION OF LAW

Based on the findings of facts and analysis above, we conclude that Appellants have shown that the Examiner erred in rejecting claims 10, 11, and 13 for anticipation under 35 U.S.C. § 102(b), and in rejecting claims 12, 14, 24, 26-29, 32, 34, and 35 for obviousness under 35 U.S.C. § 103(a).

DECISION

The Examiner's decision rejecting claims 10, 11 and 13 under 35 U.S.C. § 102(b) and claims 12, 14, 24, 26-29, 32, 34, and 35 under 35 U.S.C. § 103(a) is reversed.

REVERSED

KIS

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